The Biology and a Redescription of the Opisthobranch Mollusk *Hermaea cruciata* Gould, from Chesapeake Bay [1]

(Sacoglossa : Hermaeidae)

BY

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(1 Plate; 2 Text figures)

Our studies of the biology of sea nettles have required that dredge samples be taken at regular intervals. Part of our research was directed toward the discovery of

[1] Contribution No. 461, Natural Resources Institute of the University of Maryland

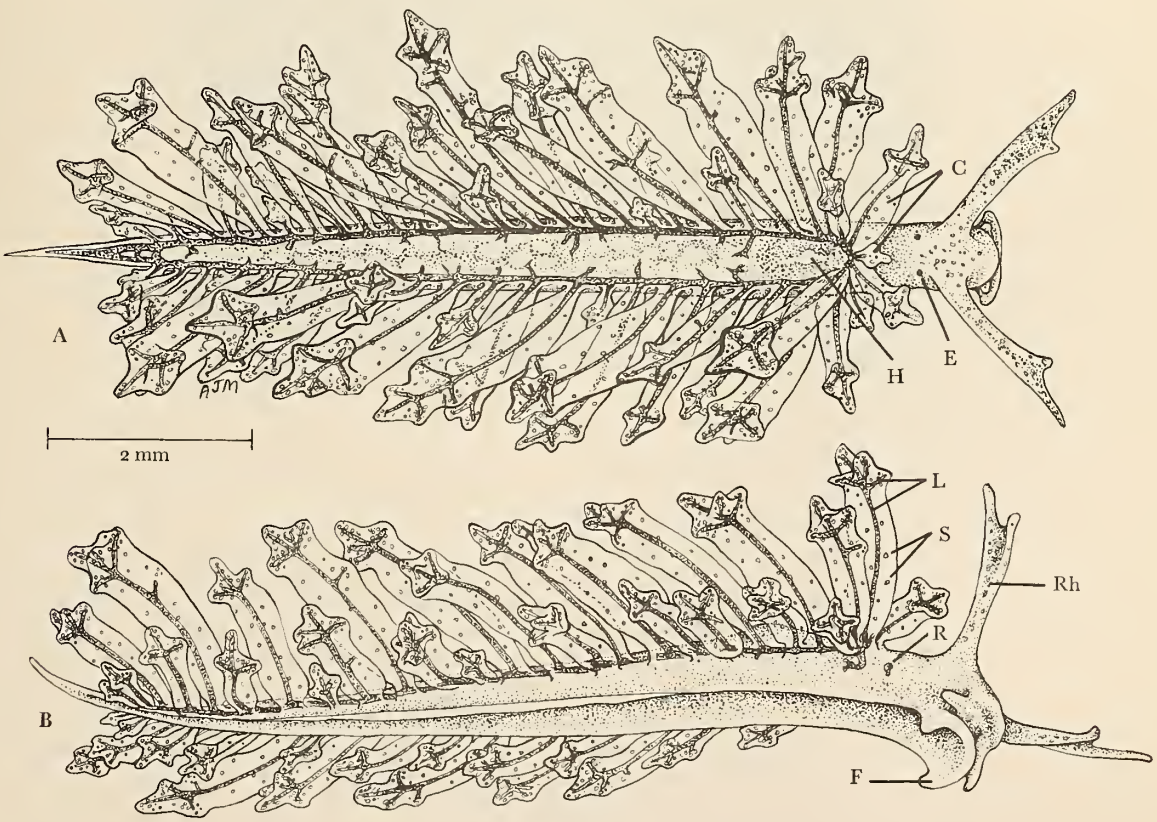

Figure 1

Hermaea cruciata
A: dorsal view
B: three-quarters view, showing reproductive opening
C – Ceras E – Eye F – foot H – heart
L – liver diverticulum S – spots R – reproductive openings
Rh – rhinophore

possible nudibranch predators on scyphozoan polyps. In addition, we recorded information on other nudibranchs in an attempt to better understand the biological relationships between jellyfish and nudibranchs. During these investigations, an adult opisthobranch mollusk was taken in October 1968 from Deal Island, Maryland (sal. 16.9‰, temp. 19.5° C). (Deposited in the Division of Mollusks, U. S. National Museum, Washington, D. C., USNM no. 577625). The animal, 10 mm long, was found among strands of the red alga, *Agardhiella* sp., and detritus in the dredge sample. The animal is identified as *Hermaea cruciata* Gould, 1870 (Figures 1 and 2). Gould (1870), Verrill (1873), and Johnson (1934) based their record of occurrence on a drawing by A. Agassiz from Naushon Island, Massachusetts, September 1863. Franz (1970: 176) reports on a specimen from Chesapeake Bay, discovered by A. Marsh (Virginia Institute of Marine Science). This, then, is the third *Hermaea cruciata* on record collected on the east coast of North America. This note discusses my observations of the living animal, its egg mass, veligers, and a redescription of the living animal. A description and drawing of the radula are given.

The body is aeolidiform, being long and slender with cerata projecting from its back. The foot is narrow (about one-half as wide as the body). The anterior portion of the foot projects laterally to form pointed palplike structures. The tail is one-eighth the length of the entire animal and is long and narrow, almost filiform. The back of the animal is high in the cardiac region; anteriorly, the body slopes to the head. The cardiac bulb stops abruptly, posteriorly, leaving the rest of the back slightly flattened to the top of the tail. The back shows paired lateral regions of liver diverticula, the anterior ends of which are joined. They extend from a region just anterior to the heart, slightly lateral to it, and well into the tail.

The head is terminal. The mouth is ventral and encompassed by fleshy lips. The rhinophores are the same length as the large cerata (approximately 3 mm). They are folded longitudinally in a manner characteristic for the genus *Hermaea*. The more dorsal fold of the rhinophore is longer than the ventral fold. There is brown pigment, the color of the liver, on the dorsal side of each rhinophore. The eyes are located just posterior to the rhinophores. They appear as distinct black spots surrounded by clear areas.

The cerata are located on the back in paired rows of 2 or 3. The dorsolateral cerata are the longest and best developed. They are cylindrical, approximately 3 mm in length, and contain a very thin liver diverticulum. The liver divides at the distal end of each ceras, twice, thrice, or 4 times, to make 4 or 5 distinct branches. One branch

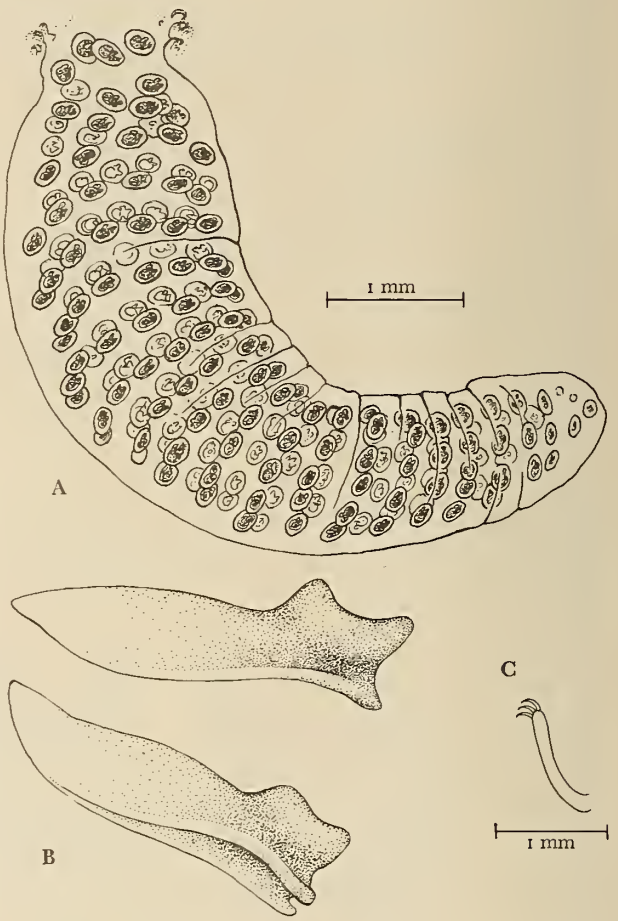

Figure 3

Hermaea cruciata

A: egg mass B: radular tooth (length 0.108 mm) C: penis

is always terminal in the center with the other branches radiating into each point of the ceras below the terminal tip. This arrangement resembles a crown. The more lateral cerata have from 1 to 3 points, and sometimes the liver extends only in the center point. There are 3 dorsal cerata situated just anterior to the heart. The anal opening, not clearly seen, appeared to be anterior to the first ceras. The reproductive openings are on the right side, posterior to the rhinophore. The penis is armed with hooks (Figure 3C).

There are no jaws. The radula has 17 teeth with 10 on the upper portion of the ribbon and 7 on the lower part.

Figure 2

Photograph of dorsal view of a living *Hermaea cruciata*